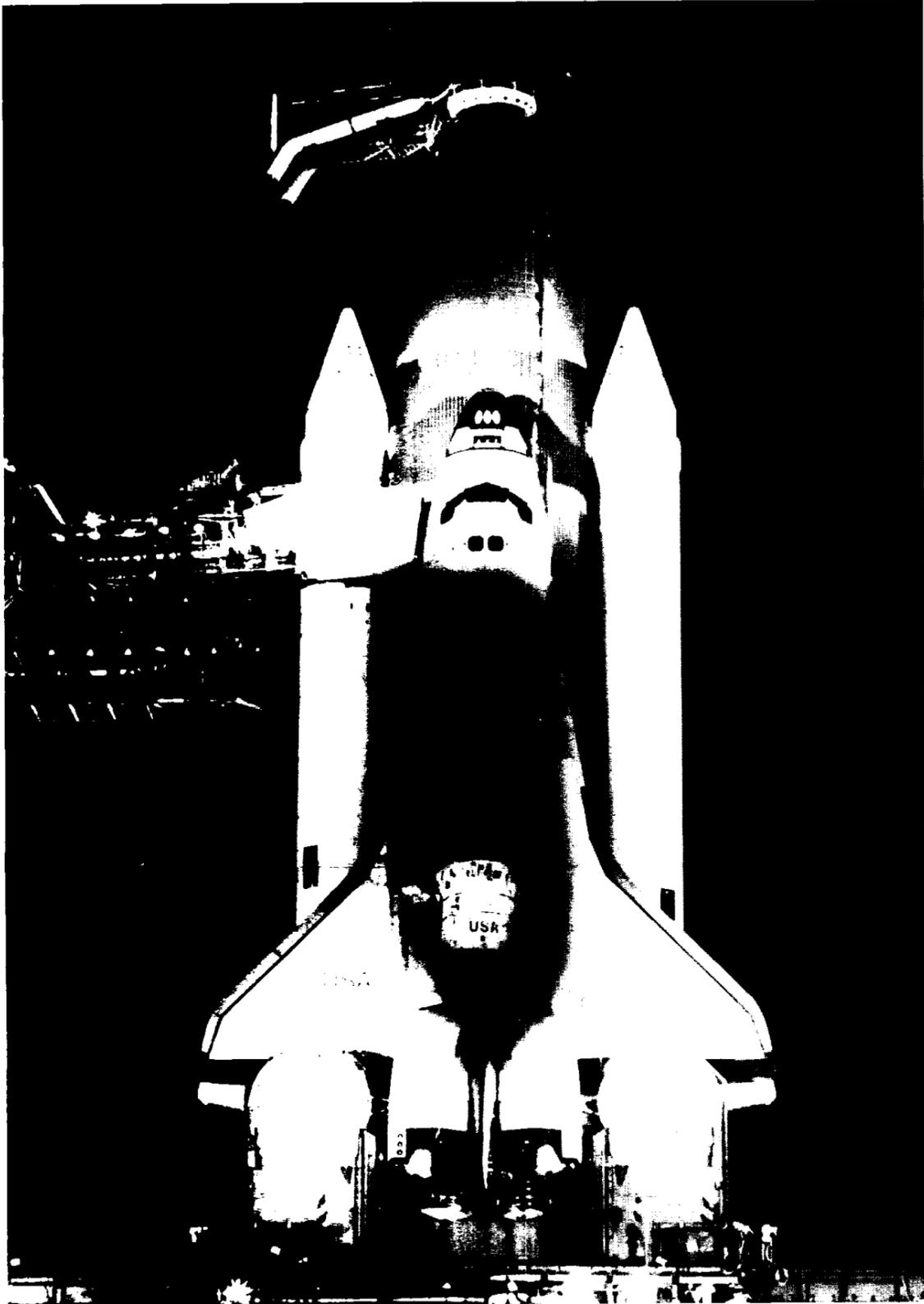


# Space News Roundup

Vol. 22 No. 4

February 25, 1983

National Aeronautics and Space Administration



## X-ray eyes

This double exposure, above, shows how the first Tracking and Data Relay Satellite and its Inertial Upper Stage booster are situated in the payload bay of *Challenger*. The double exposure was made by KSC technical photographer Klaus Wilkens.

## Lunar and Planetary Science Conference begins March 14

The Fourteenth Lunar and Planetary Science Conference will include a special session on the JSC initiative for an American return to the Moon, a program on prospects for planetary exploration, and a discussion on lunar meteorites.

The conference begins with an open house at 6 p.m. March 13 at the Lunar and Planetary Institute. Registration will continue throughout the conference on the second floor of the Gilruth Recreation Center on-site. All conference activities, including technical sessions, exhibits, poster sessions and other events will take place at the Rec Center unless otherwise noted.

From a total of 463 abstracts accepted for publication in *Lunar and Planetary Science XIV*, the Program Committee has planned 27 sessions with a total of 296 oral presentations for the four-day

conference. The sessions have been constructed around the following broad topics: lunar and asteroid regoliths, early evolution of the crust of terrestrial planets, lunar petrology, lunar geology, planetary physics, origin and history of meteorites, isotopic anomalies in the early solar system materials, irradiation effects, meteorite chronology, cratering and shock studies, major planet satellites, Mars and Venus.

Conference highlights day by day include:

### Monday, March 14

- European scientists will gather from 5:30 to 6:30 p.m. for a meeting chaired by Dr. Keith Runcorn, University of Newcastle-on-Tyne, at the LPI. Colleagues from all countries are invited to attend.

- An informal discussion on cosmic dust research will be held beginning at 8 p.m. at LPI.

### Tuesday, March 15

- The Great Chili Cook-Off and Bar B-Q commences Tuesday evening at the LPI. This third installment of the much-heralded event will feature team contests for the best tasting chili, with prizes being awarded. Paid registrants of the Conference are welcome. Guests of registrants may purchase tickets at the Conference registration desk for \$10.

### Wednesday, March 16

- The JSC Astronomer's Brown Bag Lunch Club will present Dr. Karl Henize, one of the mission specialists for STS-24, in the conference room of Bldg. 31 at noon. Dr. Henize will discuss the STS-24/Spacelab-2 payloads.

- From 1:30 to 5:30 p.m., a special planetary session, "Return to the Moon," will be presented in the JSC Bldg. 2 Auditorium. This initiative for a new American pro-

(Continued on page 4)

## NASA to press for late March launch

Shuttle program management has decided to proceed with the testing and installation of replacement engine 2017 for the Orbiter *Challenger* and will press for a March 19 or 20 launch date for STS-6, Associate Administrator for Space Flight Lt. Gen. James Abrahamson said this week.

Program officials will also institute a policy of firing Shuttle main engines at thrust levels no greater than 104 percent until launches begin from Vandenberg Air Force Base in October 1985. "For a significant and extended period of time, we will cutback to a lower thrust rating," Abrahamson said. "We don't need 109 percent until we begin launches at Vandenberg. This gives us an operational margin. The lower thrust levels will not stress the engines so badly and it will avoid a demand on the engine spares."

Spare engines are in short supply now. One of *Challenger's* original complement of three main engines, number 2011, developed a manifold crack in the main combustion chamber and had to be removed. A replacement, engine number 2016, was found to have a progressive leak in the oxidizer heat exchanger and was judged not acceptable for flight.

Fortunately, the only other new engine available, number 2017,

was almost through its certification firings and will be shipped to the Cape during the last week in February. Another alternative, using an engine from *Columbia*, would require a new software package because of the different thrust levels on OV 099 and OV 102 engines. The software package is being developed and the *Columbia* engine is being shipped to the Kennedy Space Center as a backup measure, Abrahamson said.

Personnel at the Cape will be shifted from what is essentially a three-shift operation to a four-shift per day operation with work on the weekends when necessary, he said. "We are on a very tight schedule now," Abrahamson said, "and we want to recover on flights seven and eight."

The present plan, if STS-6 is launched in late March, is to press for a late May launch on STS-7 and a late July launch on STS-8. Two Tracking and Data Relay Satellites, to be launched on flights six and eight, are necessary for a completely successful Spacelab mission on STS-9 in late September and early October. "We need two TDRS for Spacelab, and both need exercise before STS-9. The fallback is to go with only one TDRS if necessary," he said.

## More picks

### Crews named for STS-13 and two Spacelab flights

Indicative of NASA's busy move into Space Shuttle operations is the announcement last week that Robert L. Crippen, Pilot for STS-1, has been named Commander for STS-13 while still in training for STS-7 this spring.

His crew for that mission, scheduled for April 1984, will be Francis R. Scobee, Pilot, and Mission Specialists Dr. George D. Nelson, Terry J. Hart and Dr. James D. van Hoften.

STS-13, the fifth flight of the Orbiter *Challenger*, is scheduled for five days. Its major objectives will be deployment of the Long Duration Exposure Facility and rendezvous with and repair of the Solar Maximum Mission satellite.

NASA also announced the astronaut crews for Spacelab 3 and the mission specialists for Spacelab 2, on flights 18 and 24, respectively.

Commander of the Shuttle crew for STS-18 (Spacelab-3, which is scheduled for launch prior to Spacelab-2) is Robert F. Overmyer, who was the pilot on STS-5. With him will be Frederick D. Gregory, Pilot, and Mission Specialists Dr. Don L. Lind, Dr. Norman E. Thagard and Dr. William E. Thornton. Both Thagard and Thornton are also scheduled for Shuttle flights this year. Payload specialists for STS-18 will be announced later.

Spacelab-3, the first operational Spacelab mission, will carry experiments in materials processing, space technology and life sciences.

Mission Specialists for STS-24/Spacelab-2 will be Dr. Anthony W. England and Dr. Karl G. Henize. Other crewmembers and

payload specialists for that flight will also be named at a later date, according to the Flight Operations Directorate.

Spacelab-3 will fly before Spacelab-2 due to the delay in completion of the Instrument Pointing System, necessary for SL-2 experiments. SL-2 is a developmental flight carrying 13 major experiments in fields such as plasma physics, infrared astronomy and solar physics.

Crippen, a Navy Captain, flew on the first Shuttle mission and will become the first person to have flown on the Space Transportation System twice, and later, three times after STS-7 and STS-13.

Scobee, a retired Air Force Major, has been in the astronaut corps since 1978. He received his commission in 1965 and after receiving his wings in 1966, completed a number of assignments, including a combat tour in Vietnam. He graduated from the Air Force Aerospace Research Pilot School in 1972 and has participated in test programs with such aircraft as the C-5, the Boeing 747, the X-24B and the transonic aircraft technology (TACT) F-111. He has logged more than 5,300 hours flying time in 40 types of aircraft.

Nelson, who holds a Ph.D. in astronomy from the University of Washington, was selected as an astronaut candidate in 1978. He has performed various research at observatories in the United States and Europe and has written several papers on the subjects of solar and stellar convection and hydrodynamics. He is a member of the American Association for Ad-

(Continued on page 2)

## Space News Briefs

### IRAS placed within 20 meters of target

Results of the Jan. 25 launch and early operation of the Infrared Astronomical Satellite (IRAS) have surpassed all expectations, according to the Jet Propulsion Laboratory. IRAS, launched aboard a Delta rocket from Vandenberg Air Force Base, was placed within 20 meters of its targeted 900-kilometer (560-mile) altitude and began making observations of its new environment Jan. 31. IRAS will conduct an infrared survey of the sky, and is expected to reveal 100,000 or more faint, distant objects not otherwise discernable. It will be the first all-sky infrared survey, expected to be as much as 1,000 times more sensitive to the heat emissions of distant objects than any previous studies. IRAS was developed and launched as a cooperative project of NASA, The Netherlands Aerospace Agency and the Science and Engineering Research Council of the United Kingdom. The Jet Propulsion Lab is the American project manager. First image returns from IRAS are expected in the next few weeks.

### Panel to study space commercialization

The communication satellite business is already a \$2 billion a year industry; commercial production of pharmaceuticals is orbiting factories could begin as early as 1987; a private firm has expressed interest in purchasing or investing in a fifth Space Shuttle orbiter; and several American firms and the European Arianespace are working to commercialize expendable launch vehicle operations: reason enough, NASA believes, to pursue further studies of potential private sector investment in space. Accordingly, the National Academy of Public Administration has set up an 11-member panel at NASA's request to study how policies might foster private investment in what promises to be one of the major industries of the 21st Century. The academy panel, headed by former U.S. Secretary of Commerce Philip Klutznick, will identify institutional barriers which may inhibit private sector investment; propose policies and programs to foster such investment; and assess alternative ways for government and the private sector to work together. The academy's final report is due in the spring.

### Lewis develops new semiconductor process

A team of physicists at the Lewis Research Center has developed a practical manufacturing process for high purity silicon carbide semiconductors that may herald the emergence of a new breed of heat resistance electronics. Until now, most semiconductors have been made of pure silicon, which is unrivaled in purity but adversely affected by heat. Electronics using silicon semiconductors are destroyed by temperatures in excess of 600° F. Research has been underway since the 1950s to find semiconducting material capable of withstanding greater temperatures, and silicon carbide has been seen as one answer, capable of enduring temperatures as high as 1,600° F. But a practical manufacturing method has long been elusive. Sufficiently pure crystals of silicon carbide were impossible to make and experimental production methods were not repeatable. Research continued through the 1960s but was abandoned in the U.S. in 1973. It was resumed two years ago, however, when the Navy and NASA began looking for ways of putting computers in direct control of jet engines. The Lewis team, with the ideas and assistance of Dr. Shigihito Nishino, who was working on a fellowship at the Cleveland center, eventually developed a process where a pure silicon wafer is specially heated and then coated with a silicon carbide crystal buffer layer. The result is a film surface upon which other gases introduced later can deposit a uniform layer of pure silicon carbide crystal, thus forming the silicon carbide semiconductor. The involved and highly controlled process takes about six hours. Lewis physicists William Nieberding, Anthony Powell and Herbert Will were also chiefly involved in the development of the new process.

### Debus recalls launch of Explorer 1

On the previous night, winds had been running from 165 to 175 knots high aloft in the jetstream, and the Jupiter-C rocket which would carry America's first satellite was very susceptible to wind shear. Now it was late in the evening of Jan. 31, 1958, and although the jet stream had shifted north and wind speeds were lessening, the weather predictions were not encouraging, and launch director Dr. Kurt Debus, later Director of the Kennedy Space Center, wondered if the countdown should continue. A young Air Force meteorologist, Lt. John L. Meisenheimer, took Debus aside about then and told him the winds would subside long enough to launch Explorer 1 atop the Jupiter-C, and then they would pick up again. And that is exactly what happened, Debus said recently. At 10:48 p.m. EST the Jupiter ignited and carried its 31-pound scientific payload into an elliptical orbit which took it around the planet once every 115 minutes. America had entered the space age.

### Landsat transferred to NOAA

NASA has transferred the operation and management of the Landsat system to the National Oceanic and Atmospheric Administration as part of an effort to eventually commercialize the service. Under terms of the transfer, NASA relinquished operational control of Landsat 4, except for the Thematic Mapper (TM) instrument, which will continue to be operated under an experimental research and development phase of the new sensor system. NASA is still developing computer analysis programs for the TM and is sponsoring a number of investigations into its potential uses. Transfer of the TM to NOAA control is expected in early 1985. NOAA's National Environmental Satellite, Data and Information Service also operates and manages the NOAA, TIROS and GOES meteorological satellites.

# Crew selections

(Continued from page 1)

vancement of Science and the American Astronomical Society.

Hart holds a master of science in mechanical engineering and a master of science in electrical engineering. He has been in the Air Force Reserve, the New Jersey Air National Guard and is currently a member of the Texas Air National Guard. From 1968 to 1978, he was a member of the technical staff at Bell Telephone Laboratories. He has logged 2,000 hours flying time, with over 1,400 hours in jets. He was selected as an astronaut candidate in 1978.

van Hoften holds a Ph.D. in fluid mechanics from Colorado State University and a master of science degree in hydraulic engineering from the same school. From 1969 to 1974, he was a pilot in the Navy. As a pilot with VF-154 assigned to the USS *Ranger* in 1972, he flew approximately 60 combat missions over Southeast Asia. He has logged 1,850 hours flying time, with over 1,750 hours in jet aircraft. He was selected as an astronaut candidate in 1978.

Overmyer, the Pilot on STS-5, has been a NASA astronaut since 1969. STS-18 will be his second spaceflight.

Gregory, an Air Force Lt. Colonel, has been awarded the Air Force Distinguished Flying Cross, the Meritorious Service Medal, the Air Medal with 15 Oak Leaf Clusters and the Air Force Commendation Medal, as well as the 1979 National Society of Black Engineers Distinguished National Scientist Award. He holds a master's in systems from George Washington University and is a member of the Society of Experimental Test Pilots. He was selected as a NASA astronaut candidate in 1978.

Lind, who holds a Ph.D. in high energy nuclear physics, is a former Goddard Space Flight Center space physicist. He was with Goddard from 1964 to 1966, when he was selected as an astronaut. He holds the rank of Commander in the Naval Reserve and earned his wings in 1957. He has logged more than 3,800 hours flying time, with 3,300 hours in jet aircraft.

Thagard, a doctor of medicine, is scheduled to fly on STS-7 this year.

Thornton, also a doctor of medicine, is scheduled to fly on STS-8 this summer.



Robert Crippen



Dick Scobee



George Nelson



Terry Hart



James van Hoften



Robert Overmyer



Fred Gregory



Don Lind



Norman Thagard



William Thornton



Anthony England



Karl Henize

England holds a doctorate in Earth and planetary science from the Massachusetts Institute of Technology. He was selected as a scientist-astronaut by NASA in 1967 and served as support crewman for the Apollo 13 and 16 flights. He was a research geophysicist with the U.S. Geological Survey from 1972 to 1979 and returned to JSC in 1979 as a senior scientist-astronaut/mission specialist.

Henize holds a Ph.D. in astronomy from the University of Michigan and has performed research at several astronomical facilities, including the Smithsonian Astrophysical Observatory. He is the author or co-author of 56 scientific publications on astronomical research and has logged 1,900 hours flying time in jet aircraft. He was selected as a scientist-astronaut in 1967.

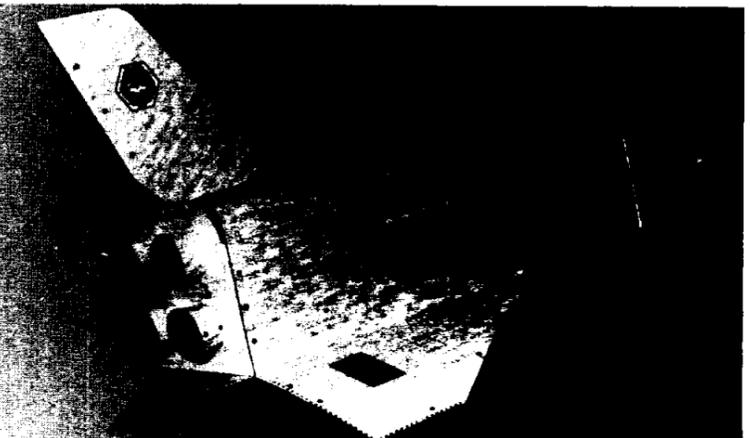
## People

Since 1971, a group of young ladies known as the **Falconettes** have given their parents, many of whom work in the JSC community, a little something extra to be proud of. The drill team, which support the Falcons in a local junior football league, have taken several first place awards over the years. In December, they took part in their first regional competition and took top honors for appearance, originality, precision and showmanship. They were awarded the sweepstakes trophy and extended an invitation to represent Texas in the national "Junior Miss" drill team competition in Redondo Beach, California this April. The young ladies are working hard now to raise the necessary funds for the trip, so if you see a smiling face selling candy, whether it's a young lady in a green Falconette T-shirt or an equally hard-working Mom or Dad, please support their efforts.

"Enclosed is our second annual unconditional donation to NASA," the letter began, and inside was a check for \$100, the second check in as many years mailed in by **Michael Dodson** and **John Chandler** of Portland, Oregon. The check was forwarded to the NASA Comptroller at Headquarters and will be applied to NASA programs. Dodson also enclosed some advice: "If you want five or six Orbiters, go for seven or eight. My daughter tells me that is the type of psychology that works best with me."



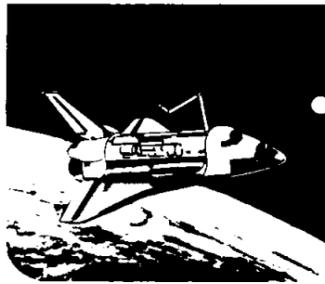
The NASA area Falconettes in all their finery.



Humor is the best medicine, they say, and one wag in Bldg. 4 dispensed it recently by hanging this four-engined *Challenger* facsimile near the offices of the STS-6 crew.

NASA  
Lyndon B. Johnson Space Center

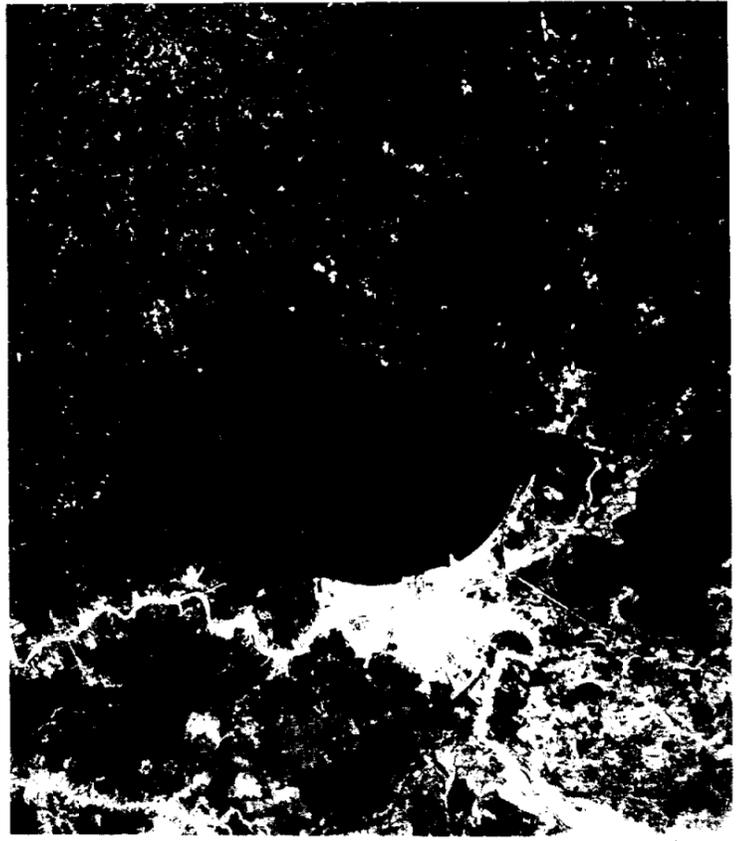
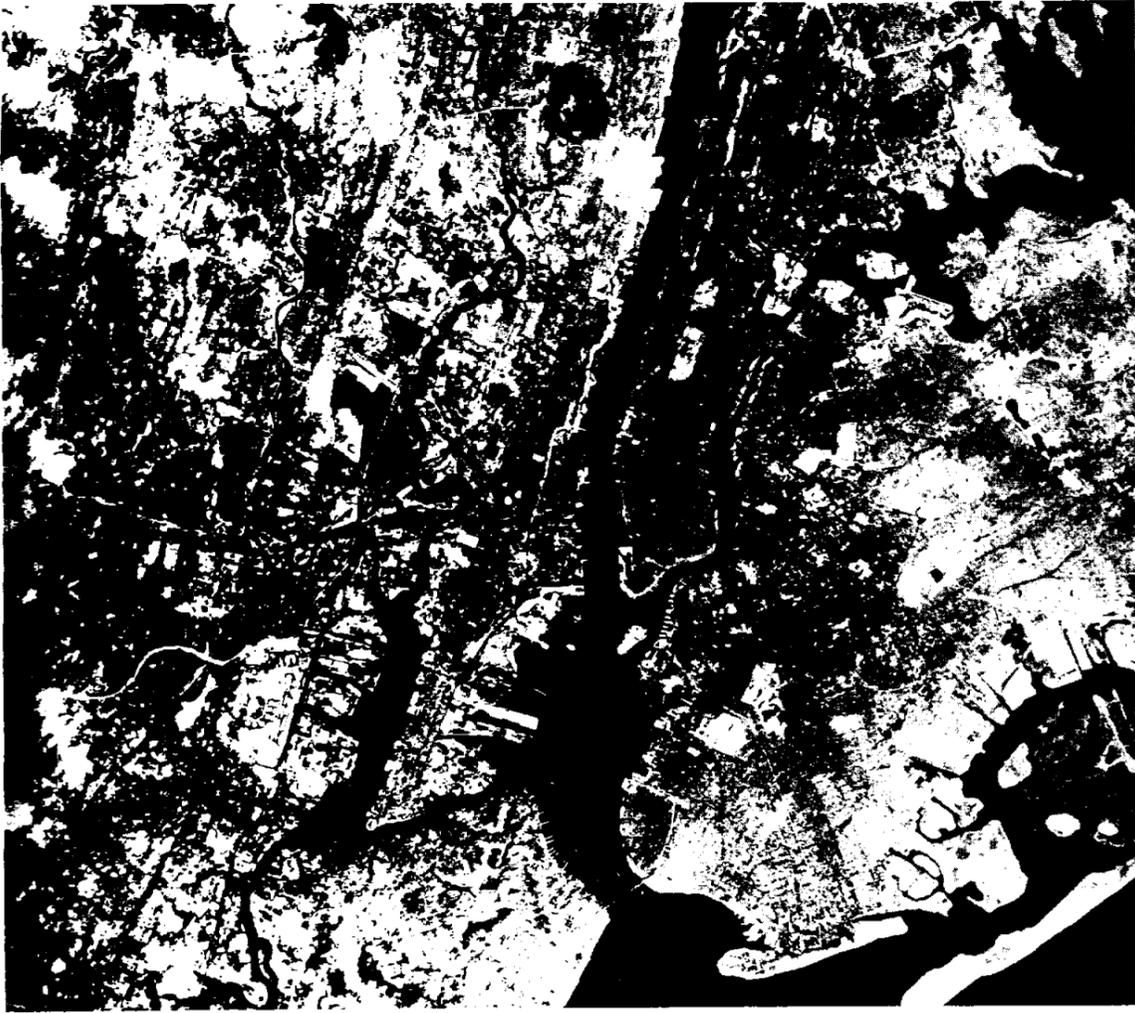
## Space News Roundup



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Editor

Brian Welch



# Picture this

*Landsat 4 views America*

Landsat 4, launched last July, has been returning some of the best images yet in America's satellite remote sensing program. Equipped with the new thematic mapper, Landsat 4 has been producing clearer images, many of them for the first time in natural color. Here we present a few snapshots from Landsat 4's growing photo album of America.

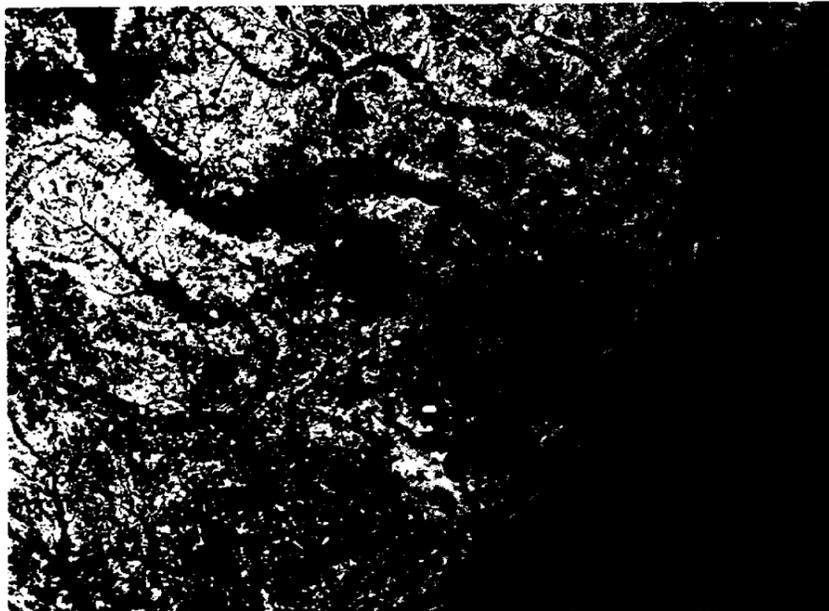
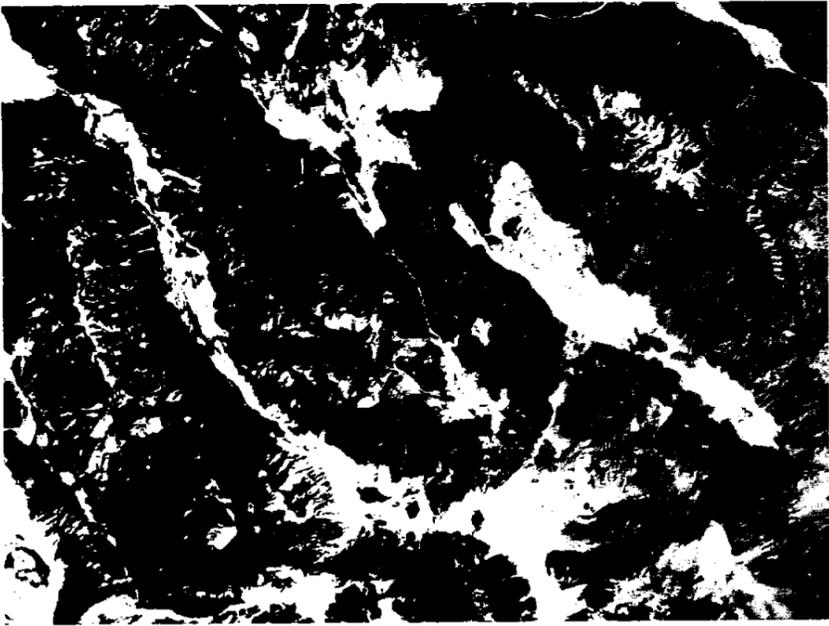
At top left, ship traffic is visible in the New York Harbor between Staten Island and lower Manhattan in this view of the New York City area. The Brooklyn Bridge, 100 years old this year, is the first encountered going up the East River, to the right of Manhattan Island.

At top right, New Orleans forms a crescent south of Lake Pontchartrain in this image using the thematic

mapper bands 1, 3 and 4.

Below left, Death Valley in California and Nevada is part of this first full scene from the thematic mapper to show a sparse region dominated by landforms and other geologic features. Below that image is a Landsat 4 view of Charleston, South Carolina and a long stretch of that state's coastline. Note the siltation off shore created by the injection of muddy river waters.

Bottom right, Boston and Providence, Rhode Island are visible from Landsat 4's 435-mile-high vantage point. Boston, at top of the picture, and Providence in the center are distinguished by their lighter colors against the deeper hues of vegetation. To the extreme right of the image is a portion of Cape Cod.



## Gilruth Center News

Call x3594 for more information

**SCUBA** — The NAUI-certified basic SCUBA course begins at 6:30 p.m. March 8 at the Rec Center. Tuesday classes run to 9 p.m. Wednesday pool sessions begin at 7:30 p.m. The cost of this course is \$70, and no equipment is necessary prior to the first meeting. Enrollment is limited.

**Ladies self-defense** — A few openings remain in this course for learning the basics of self-defense. The class meets from 9 a.m. to noon on two successive Saturdays, Feb. 19 and Feb. 26.

**Dog obedience** — We train you to train your dog. This course offers a proven training method with professional results. Dogs must be six months or older, and the course cost is \$35. The class runs from 7:30 to 8:30 p.m. beginning March 2.

**Basic auto mechanics** — This course stresses the fundamentals of auto repair. The class features three lectures on Wednesdays from 7:15 to 9:15 p.m. beginning March 23. A Saturday lab will also be held. Cost for the course is \$20 per person.

**Country western dance** — Back by popular demand, this class is available beginning March 7. The advanced dance class meet from 7:15 to 8:45 p.m., while beginners meet from 8:45 to 10:15 p.m. The course costs \$20 per couple and space is limited.

**Ballroom dance** — Learn the fine art of ballroom dance. This class begins March 3 and runs for eight weeks. Intermediate classes will meet from 7 to 8:15 p.m. Thursdays, with beginners meeting from 8:15 to 9:30 p.m. The course cost is \$50 per couple.

**Dancercise** — Part dance, part exercise, all fun. This class will gradually get you into shape. This six-week course begins March 1 and meets Tuesdays and Thursdays from 5:15 to 6:15 p.m. The course cost is \$20 per person.

**Adult's movies** — With the success of our children's movies, we have now expanded our program to include movies for adults as well. Our program features a social hour at 6 p.m., dinner at 7 p.m. and a movie at 8 p.m. The next feature movie is "On Golden Pond." Tickets can be purchased for \$4 per person at the Bldg. 11 Exchange Store.

**Softball tourney** — Our third annual Space Shuttle Open Invitational Tourney is for male and female teams. Space is limited to first come, first serve. The tournament will be held March 11, 12 and 13 with an entry fee of \$65 per team.

**Softball registration** — Now in full swing, registration for the 1983 softball season includes openings in men's, women's and mixed leagues. Space is limited.

**Basic photography** — This course includes basic principles and skills, camera exposures, film types, flash units, composition and more. The class begins at 6 p.m. March 9 and runs for six weeks at a cost of \$30.

**Square dance** — This class, plus a workshop, begins at 7:15 p.m. March 3 and runs for eight weeks. The cost is \$12.50 per person.

## Bulletin Board

### UAW food drive underway

The United Auto Workers, who represent hourly employees at Rockwell International here, are working nationwide to collect food and donations to aid the country's unemployed. The General Motor Corp. has pledged to match dollar for dollar each donation and will contribute 50¢ for every can of food collected. The collections are underway in 73 cities across the U.S. for an eight-week period. Food and cash raised locally through the drive will be channeled through charitable organizations here in Houston. In the JSC community, UAW volunteers are asking that participating employees consolidate their various donations until Tuesday, March 15, when three drop points will be staffed, or pickups will be made where requested. The drop points will be: the JSC Federal Credit Union, the parking lot adjacent to the Nassau Bay Bank Building, and at the corner of Second Ave. and Ave. B on-site. The pickup points will be open from 7 a.m. to 7 p.m. Those persons desiring a pickup should call Richard Shouse at 339-2003 before 2 p.m. March 14. For more information, call Shouse at the above number or the UAW office at 472-2298.

### Ford Brothers Circus coming

The Ford Brothers Circus is coming to Galveston County Park in League City for two performances March 3 to benefit the scholarship fund of the NASA area League of United Latin American citizens. Sponsored by LULAC NASA Area Council 660, the circus will hold two performances for ninety minutes each, including high wire, wild animal acts, clowns, jugglers, elephants and a brass band. Advance tickets are \$4 for adults and \$2 for children and are available from Ralph Gonzalez, x4253.

## Cookin' in the Cafeteria

Week of February 28-March 4, 1983

Week of March 7 - 11, 1983

**Monday:** Cream of Potato Soup; Franks & Sauerkraut, Stuffed Pork Chop, Potato Baked Chicken, Meat Sauce & Spaghetti (Special); French Beans, Buttered Squash, Buttered Beans. Standard Daily Items: Roast Beef, Baked Ham, Fried Chicken, Fried Fish, Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

**Tuesday:** Navy Bean Soup; Beef Stew, Liver & Onions, Shrimp Creole, Smothered Steak w/Dressing (Special); Corn, Rice, Cabbage, Peas.

**Wednesday:** Seafood Gumbo; Roast Beef, Baked Perch, Chicken Pan Pie, Salmon Croquette (Special); Mustard Greens, Italian Green Beans, Sliced Beets.

**Thursday:** Beef & Barley Soup; Beef Tacos, Diced Ham w/Lima Beans, Stuffed Cabbage (Special); Ranch Style Beans, Brussels Sprouts, Cream Style Corn.

**Friday:** Seafood Gumbo; Fried Shrimp, Deviled Crabs, Ham Steak, Salisbury Steak (Special); Buttered Carrots, Green Beans, June Peas.

**Monday:** Cream of Chicken Soup; Beef Burgandy over Noodles, Fried Chicken, BBQ Sausage Link, Hamburger Steak (Special); Buttered Corn, Carrots, Green Beans. Standard Daily Items: Roast Beef, Baked Ham, Fried Chicken, Fried Fish, Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

**Tuesday:** Beef Noodle Soup; Baked Meatloaf, Liver & Onions, BBQ Spare Ribs, Turkey & Dressing (Special); Spanish Rice, Broccoli, Buttered Squash.

**Wednesday:** Seafood Gumbo; Broiled Fish, Tamales w/Chili, Spanish Macaroni (Special); Ranch Beans, Beets, Parsley Potatoes.

**Thursday:** Navy Bean Soup; Beef Pot Roast, Shrimp Chop Suey, Pork Chops, Chicken Fried Steak (Special); Carrots, Cabbage, Green Beans.

**Friday:** Seafood Gumbo; Broiled Halibut, Fried Shrimp, Baked Ham, Tuna & Noodle Casserole (Special); Corn, Turnip Greens, Stewed Tomatoes.

# Science conference

(Continued from page 1)

gram to explore the lunar surface originated in JSC's Planetary and Earth Sciences Division. For more information on the proposed initiative, see "Return to the Moon" in the Oct. 29, 1982 **Space News Roundup**. Speakers and their topics during the session will include: NASA Deputy Administrator Dr. Hans Mark, keynote address; Dr. George Mueller, President of Systems Development Corp., "A Giant Foothold for Mankind;" Dr. Paul Coleman, Los Alamos National Laboratories, "Scientific Investigations of the Moon;" Dr. Philip Chandler, Office of Technology Assessment, "To the Moon and Beyond: Policy Considerations;" Dr. Larry Haskin, Washington University, "Material Resources of the Moon;" Hugh Davis, Eagle Engineering, "Lunar Oxygen Impact on STS Effectiveness;" and Dr. Wendell Mendell, JSC, co-author of the original

"Return to the Moon" paper, "Why Are We Talking About a Manned Lunar Base Now?" Each address is scheduled for about 30 minutes, including discussion. The session is open to the public and registration is not necessary.

• From 8 to 10 p.m. in the Bldg. 2 Auditorium, a joint LPSC/Planetary Society program will examine "Prospects for Planetary Exploration." The session is open to Conference attendees and members of the Planetary Society. Discussion will include near and long-term prospects for planetary exploration.

### Thursday, March 17

• One of Thursday's regular morning sessions will include a discussion of lunar meteorites and results of the examinations of Antarctic Meteorite ALHA 81005, which is thought to be of lunar origin. The session chairman, Klaus Keil of the University of New Mexico, invites people with infor-

mation on this sample to bring new or revised abstracts to the session. Attempts will be made to provide time for oral presentations.

• The Houston Section of the AIAA will convene at the Gilruth Center Auditorium at 6 p.m. for a social hour, followed by a dinner at 7 p.m. and a presentation at 8 p.m. by James Oberg on "Perspectives and Prospects of Soviet Space Programs." Oberg's book on the Soviet space program, *Red Star in Orbit*, has achieved wide critical acclaim. Reservations must be made by March 14 by calling Pat at 333-4150 or Sandra at x3995.

• At 8 p.m. Thursday, a special session, "Future Lunar Programs," will convene in the Rec Center gym featuring contributed papers from Wednesday's "Return to the Moon" session. The program will be chaired by Planetary and Earth Sciences Division Chief Dr. Michael Duke.

## Aircraft research available

Representatives of NASA's Airborne Science and Applications Program will be at JSC March 17 for a two-hour presentation on opportunities for potential experimenters.

The meeting will begin at 9 a.m. in Room 2026 of Bldg. 17. The representatives will explain the capabilities of the program and describe the funding requirements and procedures for potential users of airborne platforms.

The program manages the Space Science and Applications fleet of airborne platforms, which

includes six aircraft for Earth and astronomical observations and atmospheric measurements. The fleet consists of a Lockheed ER-2, two Lockheed U-2s, a Convair CV-990 (the *Galileo II*) a Lockheed C-130, a Lockheed C-141 (the *Kuiper Observatory*) and a Gates Learjet 24.

The *Galileo II* will be at Ellington Air Force Base March 17 in conjunction with a data gathering mission and will be available for inspection by those who would like more detailed information about aircraft installation of ex-

periments and the general use of airborne platforms.

Recent flights of these aircraft have included missions for simulation of the Landsat 4 thematic mapper, underflights of the Shuttle for infrared imagery during reentry, underflight ground truth for Shuttle experiments and developmental flight testing for Shuttle experimental hardware. The FY 1983 plan includes over 1,767 hours of use for all six aircraft.

For details about the meeting and how to tour the *Galileo II*, contact Bryan Erb at x4776.

# Roundup Swap Shop

### Property & Rentals

For sale: four wooded lots in Wild Country Lakes Estates, near Livingston, or trade in Friendswood/Alvin area. Call 946-3408 after 5 p.m.

For lease: 10 acres, Alvin area, horses, cattle or ? Call L. Damewood, 482-5572.

For sale: 3-2-2 University Green townhouse, less than 2 years old. Call Vivian 280-0230 after 5 p.m.

For lease: One BR condo, two years old, fireplace, balcony and patio. W/D connection, \$400/mo. plus deposit. Call 484-5256 after 5 p.m.

For lease: Sterling Knoll 3-2-2, six-month lease, no pets, \$575/mo. plus one month deposit. Call 488-0500 or 480-6516 after 6 p.m. or weekends.

For lease: furnished waterfront condo, spectacular view of Clear Lake, one BR and washer/dryer, balcony, \$800/mo. plus utilities. Call Paul Maley, x3319 or 488-6871 nights, weekends.

For rent: Heritage Park 3-2-2, fence, refrigerator, cul-de-sac, abutting school, clean, \$550/mo. Call 482-6609 after 5 p.m.

For rent: One BR duplex, 1 bath, living room, dining room/den, \$325/mo. plus utilities, midtown. Call 529-2296 after 5 p.m.

For rent: Two BR condo at Heavenly Valley ski slopes, for rent spring break (March 19-26), sleeps 6, \$600, plus great family rate airline tickets, \$326 RT, kids free. Call Bob or Lynne, 333-4134.

For sale: Large one BR condo, fantastic view, all appliances, security system, many extras, Gulfgate area. Call 644-0574.

### Cars & Trucks

1975 Toyota Corolla, AM/FM/cassette, AC, new tune-up, needs work but drivable, best offer. Call Werner, x5592 or 486-0343 after 4 p.m.

1970 Chevy Impala, \$600; 1972 Olds Delta 88, \$700. Call 486-0219 after 5 p.m.

1982 Chevy Celebrity, auto, air, power, 7K miles, \$6995 or equity plus \$250/mo. payment. Call 488-3966 or 662-3242.

1978 Chevy Malibu station wagon, 70K miles, new brakes, runs well, needs body work, rear window, \$1,000. Call Lee, 480-5626.

Great Deal: Loan value plus \$200 buys this 1981 Pontiac Catalina 3-speed wagon, nice car, many extras, lovingly tended, good mpg (17/21). Call Steve, x5111 or 554-2435 after 5:30 p.m.

1975 Olds Cutlass 9-passenger wagon, AC, PS, PB, auto, 76K miles, good condition, \$1,350. Call J. Homick, x5457 or 471-2276.

1967 Mustang, V-8, auto, AC, clean, partially restored, runs well. Call Mack, 486-7379 after 5 p.m.

1971 Jeep Wagoneer, excellent condition, needs engine work, \$1,100. Come and see. Call Farley, x4476.

1974 Duster, slant 6, air, 69K miles, \$1,200. Call 946-4059 after 6 p.m.

1978 Pontiac Catalina wagon, V-8, AC, PS, PB, AM/FM, 82.5K miles, excellent condition, \$3,000 or best offer. Call Gonzalez, x4007 or 534-2720.

1977 Z-28 Camaro, 4-speed, good condition, AM/FM/8-track stereo. Call 644-8936.

1968 Pontiac GTO, 350, basket case, needs body work, restoration, \$400. Call Terry White, 332-5177.

1971 classic Javelin SST-304, AT, PB, AM radio, new keystone rims and tires, \$500. Call 471-1473 evenings and weekends.

1980 Citation, 4cyl., 4 spd., 4 dr. hatchback, 38K miles, excellent condition, loaded with extras. Call 534-4603 after 6 p.m.

1981 Honda Prelude, AC, AM/FM stereo/cassette, moon roof, low miles (13K), immaculate, \$7,500, under Blue book. Call Dan Mangieri, x5107 or 488-5471.

1982 Firebird SE, T-top, AM/FM/tape, full power, cruise, tilt, more, \$10,500 or best offer. Call Mark, x6226 or 332-2686 after 5 p.m.

1981 Camaro, V8, 267, blue metalflake, T-top, front and back spoiler, rally wheels, rear defogger, cruise, extras, immaculate. Call 488-2269.

1978 Bronco, V8, 351 Cleveland, 4-speed, headers, rough country shocks, new marine battery, wheels and tires, must see. Call 488-2269.

1969 Opel GT, looks like mini-Corvette, runs well, no rust, \$1,750. Call 486-5217 after 5 p.m.

### Household

For sale: Baby Crib, Mattress, Bumper Pads, \$35. Call 487-1883 after 5 p.m. (Pasadena).

Ethan Allen Dining Room Suite, solid cherry, 7 pc., Queen Anne leg, 7 mos. old \$1200. Call Jim, 488-8143.

For sale: Like new frost-free RCA 19.6 ft.<sup>3</sup> upright freezer, warranty coverage available, \$450 or best offer. Call x5421 or 333-3834 after 6 p.m.

Whirlpool electric clothes dryer, 3 cycle, 3 temp, large capacity, 8 months old, under warranty, \$200. Call Steve Williams x4637.

Gemeinhardt Flute with solid silver heat \$290, perfect. Call Jim, 488-8143.

New Fingers Twin Size Mattress, \$45. Call 479-0849 anytime or 471-3165 after 5:30 p.m.

New Stearns and Foster twin mattress (firm) \$65. Call Chuck x3073 or 334-1628 after 4:15 p.m.

Couch and matching chair, \$80, 480-7200 after 5 p.m.

Kenmore washer and gas dryer, will deliver and connect, \$100 for both, 482-9116.

### Miscellaneous

Osterizer blender, \$20; guitar case, \$15; craftsmen's wrench set, metric, \$25; lamp shade, \$10; electric eraser, \$25; men's hiking boots, size 9, \$25. 333-9234.

Schwinn "Varsity" 10-speed, 25 inch frame, good condition, some new components, \$115 or best offer. Call Jeff F. x2055, 480-3281 after 5 p.m.

82 Yamaha 50 special, 600 miles, perfect condition \$500. Rosalind, 334-1521 after 5 p.m.; 538-3192 (wk. no.)

Lost - an amber necklace in building one or building one parking lot. Please call Stella Leikam at x3731.

Telephone Answering Machine, Duotone with remote control, \$75. K. Ebeling x2719 or 480-6365.

One-way ticket from Hobby to Nashville TN available in mid-March. \$50. Call Raymond x2759 or 486-0209.

For sale: Zenith stereo, record player, 8 track & recorder. Speakers (small or large) plays great, record player needs a new needle. Would be a good gift for the graduating Senior. Call 996-9070 after 5 p.m.

Computer Printer, 100 characters per sec. impact printer, 132 column, serial or parallel interface. \$150.00. Jim Weldon, x4971 or 482-1461 after 5 p.m.

For sale: 500 lb. capacity bench with leg lift, over 200 lbs. cast iron weights, bar, and dumbbells, like new, \$115. Call Tim Fitzsimmons 488-5660 x471.

Panasonic VHS video recorder, model PV-1270, 24 hr. programmable, like new, \$300. Call Tom x3918 or 488-5641.

For sale: 10' inflatable rubber boat with wood deck and transom for 25 hp (fishing, scuba diving, lifeboat), \$475. Call B. Reina x2314.

For sale: Royce Model 606 23 channel mobile CB with turner power mike, slide mount, and flip-flop antenna, excellent condition, \$80. Call Frank x3836 or x3837.